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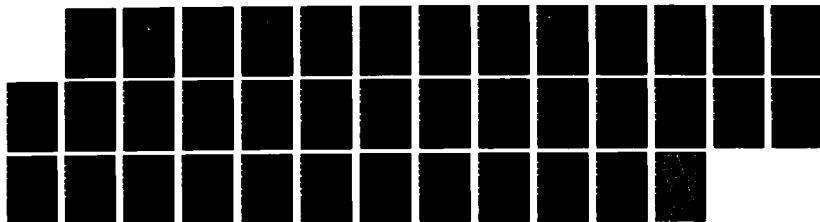
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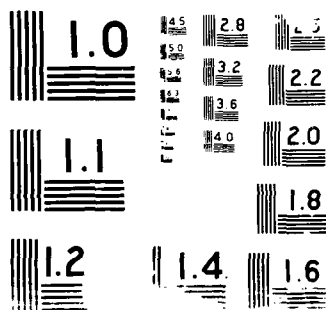
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STUDENT REPORT

NATO'S MILITARY STRATEGY AND FORCES

MAJOR JOHN L. CHRISTENSEN 88-0530

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STATEMENT A
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TITLE NATO'S MILITARY STRATEGY AND FORCES

AUTHOR(S) MAJOR JOHN L. CHRISTENSEN, USAF

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SPONSOR DR. MICHAEL COLLINS

Submitted to the faculty in partial fulfillment of
requirements for graduation.

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PREFACE

The North Atlantic Treaty Organization (NATO) is an incredible alliance. The complexity of issues facing the alliance can be staggering. Sixteen nations participate in the organization. All of these nations can be fiercely independent. To sustain a democratic alliance for almost forty years has been a tremendous accomplishment.

I have always had an interest in NATO, both professionally and personally. This research project has been an opportunity to take an independent look at the alliance with an eye toward deciding for myself whether or not this collection of nations has a plausible plan to defend itself. I intentionally stayed away from a numbers crunching approach. It is possible to pick up any number of professional or nonprofessional journals and be told that NATO is numerically inferior to its enemies. Many of these articles conclude therefore that NATO cannot defend itself and that its only hope for survival lies in greater military spending by the US. Most of these studies of NATO rely solely on the quantitative analysis of NATO vs the Soviet/Warsaw Pact forces.

It appeared to me that numbers alone can serve to confuse the reader about the actual capabilities of military forces. This study will concentrate on the qualitative aspects of NATO's forces. The numbers of forces will appear in this study, however I purposely steered clear of making a direct comparison of force strength. In place of this number analysis I stress the capabilities of the NATO forces and their weaknesses.

Since the INF treaty was recently signed, debate has begun anew as to how the NATO forces are going to operate with their new force structure and what that force structure will be. To answer these questions, one should understand the current status of those forces. This paper will provide the reader with a good foundation to begin his own analysis of NATO capabilities so that he can make his own judgement as to NATO's best course of action. To accomplish this goal, the scope of this project was kept purposely broad. Hopefully the reader will be encouraged to go into greater detail in certain aspects of this study. Books have been written about just one aspect of this study. It is my hope that the reader will have a better feel for the overall status of NATO's strategy and the forces it employs to fulfill that strategy, as a result of reading this study.



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ABOUT THE AUTHOR

Born in Fairbanks, Alaska on 29 January 1951, Major John L. Christensen received his commission on 6 June 1973 at the United States Air Force Academy. After attending Undergraduate Navigator Training at Mather AFB, California he was assigned to Plattsburgh AFB, New York and then Pease AFB, New Hampshire as a radar navigator and instructor radar navigator in the FB-111A aircraft. In February 1978 Major Christensen began Undergraduate Pilot Training at Vance AFB, Oklahoma. Upon graduating from pilot training he was assigned to Mather AFB. as a T-37 instructor pilot and academic instructor in Undergraduate Navigator Training and the Tactical Navigator Training programs. In July 1981, he returned to Plattsburgh and Pease AFBs as an aircraft commander and instructor pilot in FB-111s. Major Christensen then was selected to instruct at the FB-111 Combat Crew Training Squadron (CCTS), Plattsburgh AFB, New York. While in CCTS, he served as flightline instructor, academic instructor, chief of requalification/difference training, chief senior officer qualification, flight commander, deputy and then chief of CCTS standardization and evaluation branch, and assistant operations officer. In August 1987 he reported to Maxwell AFB, Alabama for Air Command and Staff College.

Major Christensen's awards include the Meritorious Service Medal (one oak leaf cluster) and the Air Force Commendation Medal. His military education includes Squadron Officer School (correspondence and in-residence), Air Command and Staff College (seminar, and in-residence) and the National Security Management Course (correspondence). He has a Bachelor of Science Degree in Geography from the United States Air Force Academy and a Masters of Science Degree in Systems Management from the University of Southern California.

Major Christensen is married and he and his wife, Norma, have two children, David and Julie.

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EXECUTIVE SUMMARY

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REPORT NUMBER 88-0530

AUTHOR(S) MAJOR JOHN L. CHRISTENSEN, USAF

TITLE NATO'S MILITARY STRATEGY AND FORCES

I. Problem: To analyze the military strategy of the NATO alliance and determine if the forces NATO employs to fulfill that strategy are capable of performing their assigned task.

II. Objectives: 1) Describe the various components of NATO's strategy of "Flexible Response." 2) Assess the effectiveness of this strategy in meeting its objectives of deterrence, while raising the nuclear threshold. 3) Make specific recommendations to resolve the limitations noted in support of the strategy of "Flexible Response."

III. Discussion of the Analysis: NATO's military strategy has evolved over the years to enable it to achieve its stated military objectives, deterrence of aggression and to keep the possibility of having to resort to nuclear arms at an acceptably high threshold. The strategy NATO adopted in 1967 is that of flexible response. This provides them with the ability of responding to any aggression with the appropriate level of retaliation. Previous strategies were either unsupportable with the force structure that was

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available or were so reliant on an immediate nuclear response as to be no longer credible. The components of NATO's strategy are forward defense and follow on forces attack (FOFA).

The forces NATO utilizes to accomplish its strategy are broken down into: theater nuclear forces; conventional air, land, and sea forces; and command, control, communications, and intelligence forces. Also covered in this study are the logistic capabilities to support these forces.

The theater nuclear forces are accurate, survivable, and cost effective. Political problems arise concerning their employment on NATO territory. Conventional forces of the alliance are key to the concept of forward defense and to FOFA.

The air forces are well trained, equipped with modern equipment, and ready to perform their missions, including FOFA. Problems with numerical inferiority, vulnerability of their airfields, and lack of a standardized identification system still exist.

Ground forces are positioned so as not to allow an aggressor to easily gain any NATO territory. Ground forces enjoy a qualitative edge in weaponry such as the TOW and HOT anti-tank weapons. As the defenders, they have the advantage of prepared positions. The numerical superiority of Soviet/Warsaw Pact (S/WP) ground forces, especially in armor, present NATO with a great problem. NATO's reliance on reserves and reinforcements to overcome this problem is a concern. The NATO plans are complicated by the lack of reserve manpower pools in the US, Canada, and Great Britain and the need to transport large numbers of reinforcements across the Atlantic by ship in event of hostilities.

Naval forces of NATO are aided in their task of controlling the Soviet navy by geography and technology. The alliance enjoys a qualitative edge in anti-submarine warfare, aircraft carriers, and mine warfare. They suffer from numerical disadvantage in the north and from the on going Soviet modernization of their fleet at a rate that can not be matched by most NATO nations.

Command, control, communications, and intelligence (C3I) assets of NATO are excellent. AWACS, Global Positioning System, and Joint Tactical Distribution System are three examples of excellent C3I systems currently being fielded by NATO. All of these systems are superior systems with good

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interoperability and excellent electronic countermeasures capabilities. The lack of NATO ability to renew space based assets and the excellent Soviet capability in this area is great cause for concern.

Finally, logistics for the alliance are vitally important. Approximately 90% of all reinforcements and supplies for a war in Europe would have to travel by ship. The shortfall in ships to transport this material needs to be addressed. The C-17 and an overall improved airlift force would help solve the current airlift shortfall. The need to make all NATO logistical systems more interoperable is vital to the overall success of the logistic effort within the alliance.

IV. Recommendations: NATO must deploy an identification system for NATO aircraft as soon as possible. The C-17 program must be a top priority to answer NATO's shortfall in airlift capabilities that now exist. Prepositioning of war materials is absolutely vital for all nations of the alliance. Even with warning of an attack, time would not be available to manufacture and transport the necessary supplies to sustain the NATO forces against an all out effort by S/WP forces. NATO can not rely on the US supplies to sustain them until resupply.

V. Conclusions: NATO forces have a qualitative edge over S/WP forces, but the edge is not great. The strategy of flexible response is a credible strategy. Forward defense and FOFA are not only good plans, they present the best possibility for success in a defensive strategy. NATO can not rely on technology alone to defeat the S/WP. Attrition is inevitable and must be planned for when modernizing forces. Interoperability in all systems must be considered to achieve the proper force multiplier effect that is desired by NATO to overcome the numerical deficiencies of its forces.

Chapter One

INTRODUCTION

The countries of Europe have been at peace for more than 40 years. There are many reasons for this peace. Much of the credit can be given to the cooperation of the countries belonging to the North Atlantic Treaty Organization (NATO). The military strategy of this alliance has evolved over the years to meet political, economic, and military changes. (10:2)

With all of its intricacies, the study of NATO can be a confusing and burdensome task. This paper will not endeavor to examine NATO as a whole. Rather, it will study NATO's military objectives, its military strategy in pursuit of those objectives and analyze its military forces that carry out that strategy.

The analysis will begin with a look at the overall military objectives of NATO followed by a study of the military strategy that NATO employs in support of those objectives. A qualitative analysis of NATO's forces will follow and will be the bulk of the study. This section will analyze the strengths and weaknesses of the forces NATO employs to fulfill its military strategy. Included in this analysis will be: theater nuclear forces; conventional air, land, and sea forces; command, control, communication, and intelligence (C3I) elements; and the logistics support for these forces. After examining its military strengths and weaknesses, some recommendations will be offered to improve NATO's war-fighting capability in support of its overall military objectives.

Chapter Two

NATO'S MILITARY OBJECTIVES AND STRATEGY

MILITARY OBJECTIVES

NATO's military objective is twofold. The primary objective is that of deterrence.(2:198) The second is to raise the nuclear threshold.(11:87) These two objectives should not be viewed as dichotomous aims. Rather, deterrence is the goal of both the conventional and the nuclear forces. As a matter of national survival it is in the best interests of the European people to keep the possibility of a nuclear confrontation as remote as possible. They are not willing, however, to sacrifice their freedom just to avoid a nuclear exchange.

MILITARY STRATEGY

NATO's military strategy has evolved over the years. Prior to the current strategy, NATO was unable, politically, to muster the forces needed to execute its plan.(2:194) The overall strategy of "Forward Defense" which NATO had adopted in 1950 forced the alliance into an early reliance on nuclear weapons to insure defeat of the Soviet/Warsaw Pact (S/WP) forces.

This strategy gave way to a strategy of "Massive Retaliation" in 1957.(2:194) This new strategy called for an immediate nuclear attack against S/WP countries if NATO was attacked. This reliance on an immediate nuclear response caused a great deal of political turmoil within NATO. As early as the Kennedy administration, NATO's reliance on nuclear weapons to repel virtually any attack began to come under attack itself.(2:196) In 1967 NATO adopted its current military strategy of "Flexible Response".

Flexible response relies on its conventional forces as a significant portion of its deterrent posture.(2:197) All of the previous strategies employed by NATO had dealt only with the objective of deterrence. This new strategy addresses a new objective, raising the nuclear threshold.

The changing strategies employed by NATO all meet the primary objective of deterrence. Along with deterrence, raising the nuclear threshold is now a key objective for the alliance. The desire to raise the nuclear threshold, thus limiting the possibility of having to resort to nuclear weapons to counter any S/WP thrust into western Europe, has evolved over the years. As distasteful as the use of nuclear weapons on their own soil is, the NATO nations in Europe will continue to rely on those weapons as the ultimate guarantor of their freedom. The wish is to make it clear to the S/WP that any attack on any NATO nation will be met with an appropriate level of response up to and including the use of nuclear force. The ultimate political objective of assuring the continued integrity of all member nations is thus insured. (2:199)

COMPONENTS OF NATO STRATEGY

The objectives of deterrence and raising the nuclear threshold are clearly met in the strategy of flexible response. This strategy, as presented in MC-14/3, provides for the tailoring of military response based on the type and degree of threat involved. As the name implies it is not an offensive strategy, rather it seeks to respond aggressively to any level of attack.

Flexible response is the overall military strategy of NATO. It is designed to keep the fight as close to the inter-German border as possible. (2:198) To achieve that end there are two components of this strategy. These components are; forward defense and Follow on Forces Attack (FOFA).

Forward defense at one time was the entire NATO strategy. It has evolved, however, to be the cornerstone of that strategy. As the sole strategy, forward defense never enjoyed the necessary support of the alliance in terms of forces necessary to accomplish its goals. In 1952 when forward defense was replaced by massive retaliation as the primary strategy NATO did not abandon the principle concept of forward defense. Instead of ceasing to be a part of NATO strategy forward defense became that cornerstone in the strategy.

In 1984 NATO adopted FOFA to complement forward defense. (23:61) This new component of NATO's strategy was implemented with the purpose of raising the nuclear threshold. (11:88) Using FOFA, NATO could now buy some time to slow down a S/WP advance and possibly find and exploit a weakness in their front lines. Should FOFA fail to slow or stop an attack on NATO the principle of forward defense would justify the use of nuclear weapons at an early enough stage

in the battle to preclude an overrun of western Germany. (18:440)

FORWARD DEFENSE

The concept behind forward defense is that NATO will make a stand against an attack at the border of whatever country is attacked. There is no plan to drop back to a more defensible area and in so doing relinquishing NATO territory with minimal resistance. This plan is premised on the fact that NATO does not have sufficient depth of territory to allow the S/WP to hold a significant amount of the Federal Republic of Germany (FRG) before that country and a sizeable portion of NATO's forces would be out of the battle. (2:198) If NATO perceives that forward defense is not working, their primary alternative is a resort to nuclear weapons. (11:87) To forestall the failure of forward defense it will be necessary to prevent the S/WP forces from reinforcing their front line troops.

FOLLOW ON FORCES ATTACK

The primary purpose of FOFA is to raise the nuclear threshold and improve NATO's conventional war fighting capability thus providing a credible deterrence to S/WP aggression in Europe. (11:87) As mentioned before the success of forward defense hinges on the S/WP front line forces being unable to get reinforcements and supplies. FOFA is the method NATO will use to deny the attacker the full benefit of his second echelon forces. "The objective of FOFA is to attack an enemy's military potential before it can effectively be brought to bear against NATO forces." (7:6) FOFA uses airpower to strike targets behind the front lines at choke points, depots or other target concentration areas that would have the greatest effect of delaying or disrupting enemy resupply efforts. (7:6)

A great deal of controversy has arisen over the adoption of FOFA as a component of NATO strategy. This controversy however is unwarranted. FOFA is not a brand new way to wage war. FOFA is a new way to say air interdiction. (7:6) Air interdiction has been with us since at least World War II. It was used to isolate the Normandy Beachhead before D-Day. (6:136) It is an important means of reducing the effective strength of an enemy's forces by cutting off entirely, his ability to call on his reserves of men and material. Interdiction can be used in a defensive or offensive strategy. FOFA adds depth to the battle field without giving up precious territory. (7:8) To be effective FOFA targets must be selected to limit the ability of the

S/WP forces to maneuver, and at the same time, force them to consume supplies at a high rate. This tactic will provide NATO combined arms forces with sufficient opportunity to locate and exploit weaknesses in S/WP forces. (7:7)

Flexible response is an excellent strategy for NATO. Forward defense and FOFA make this strategy credible. Given the lack of territorial depth there is little choice except to fight the battle as close to the inter-German border as possible. Using a flexible strategy, and not relying on a nuclear response alone, strengthens the perception that NATO would be willing to defend itself against any aggression. If NATO was to rely solely on the nuclear option the decision to respond would be much more difficult. If the S/WP mount less than an all out attack, the results of a nuclear response may be judged worse than the consequences of no response at all. A conventional defense is politically easier to implement and this must be recognized by the S/WP.

FOFA as a complement to forward defense, enables NATO to employ an important principle of war, that of the initiative. Using FOFA, NATO can now choose the time and place to engage the enemy. A strictly defensive strategy would place the NATO forces in the situation of having to respond to S/WP initiatives, rather than being able to influence the tempo of the battle.

By striking with long range forces at the S/WP's rear, NATO can achieve a better economy of forces with its limited resources. By destroying S/WP forces and logistical support in the rear, the NATO forward defense concept has a much higher probability of success against a numerically superior enemy. The bottom line is that few decisive victories have been won with a purely defensive battle plan. Forward defense and FOFA provide NATO with the necessary defensive plan to slow down the enemy and permit effective reinforcement of its front line troops. At the same time, it has the necessary offensive power to make continued attack a losing proposition for the S/WP.

NATO employs a wide range of forces to carry out the strategies studied here. The next section will analyze those forces: their basic composition, and their strengths and weaknesses.

Chapter Three

A QUALITATIVE ANALYSIS OF NATO'S FORCES

This analysis of NATO's forces will include: theater nuclear forces (TNF); conventional forces; command, control, communications, and intelligence elements; and the logistics infrastructure. Each element of the force structure will be examined separately. For the purpose of this paper all NATO nuclear forces will be referred to as the theater nuclear forces.

THEATER NUCLEAR FORCES

NATO's nuclear force must be capable of performing its role in the event of a surprise nuclear attack or when the conventional forces cannot withstand the advance of S/WP forces. They must be capable of carrying out selective, precise attacks that limit collateral damage since the likelihood of having to employ these weapons on their own soil is very high.(31:56) This analysis will not consider US strategic nuclear forces, but will focus instead on short range (0-150km), medium range (150-1000km), and long range (over 1000km) NATO nuclear forces only.(31:78)

Each specific category of nuclear weapons has its own set of strengths and weaknesses. All NATO nuclear forces have a common disadvantage which is inherent in the control of nuclear weapons. Before a nuclear weapon can be employed, specific approval must be given and, in the case of battlefield weapons the nuclear warheads must be released from the storage area to the battlefield.(31:61) This process requires good communications and timely decision making to achieve the best results. Possible delays in the authorization of the use of these weapons must be kept to a minimum if effective employment at the proper time is to be achieved. This problem of timely authorization and release is most evident in the short range nuclear force.

SHORT RANGE NUCLEAR FORCES

Short Range Theater Nuclear Forces (SRTNF) are often referred to as battlefield weapons. These forces include 8 inch and 155mm howitzer shells as well as Lance and, the now obsolescent, Honest John missiles.(31:67) These weapons have ranges up to 100km and therefore are deployed forward with front line troops. Because of their deployment and large numbers, approximately 1150 warheads, they present their own unique set of advantages and short comings.

Strengths

The diversity in systems employed in the SRTNF adds greatly to the uncertainty the S/WP forces face when confronted with an attack on NATO. The large numbers of SRTNF systems present a monumental targeting task and when combined with the mobility of all these systems, they comprise a highly survivable deterrent force.(31:67) The 8 inch and 155mm howitzers are highly accurate and capable of firing low yield warheads. This combination allows the use of nuclear power with minimal collateral damage.(31:67)

Howitzers have another advantage which adds to their cost effectiveness. They can be used in both the conventional and the nuclear role.(31:67) This ability makes them considerably less politically sensitive and financially less of a liability.(31:67)

Accuracy, effective firepower, and numbers deployed compound the S/WP problems preparing for war and executing its war plans. The Pact will not be able to mass its troops near enough to the border for an attack on NATO without putting those troops in jeopardy from possible attack by the SRTNF.

The commitment that NATO has toward deterrence is exemplified by the large number of SRTNF warheads and the fact that eight of the sixteen nations in NATO field the 8 inch howitzer.(31:67) Despite the commitment of NATO to SRTNF, there are several weaknesses to this force.

Weaknesses

Because of the need to deploy these battlefield weapons with the front line troops, two problems repeatedly surface. If those troops are about to be overrun, it is argued that NATO would resort to use of the SRTNF rather than lose them. Because of this "use it or lose it" problem, opponents of SRTNF argue that NATO will be forced into an early first use

of nuclear weapons just to avoid their loss.(31:67) Whether these arguments are valid or not, it is true that time sensitivity is greater for battlefield nuclear weapons than for systems deployed further behind the front lines.

When these weapons are employed, they would most likely be used against mobile targets.(31:67) The time involved in locating targets, authorizing the use of these weapons, and releasing the warheads to the units would have to be kept to a minimum. The longer the delay the less reliable the intelligence on the target position would be.

A final disadvantage of the SRTNF is the high probability that these weapons would have to be used on NATO's own territory.(31:67) This fact may delay the decision to use them and this delay could worsen the tactical situation. The territory on which the SRTNF will be used causes considerable public debate and, therefore, is a particularly sensitive subject for politicians and military leaders alike.

MEDIUM RANGE NUCLEAR FORCES

Medium Range Theater Nuclear Forces (MRTNF) are capable of reaching as far as 1000km behind the front lines. There are two weapon systems in this category; Germany's 72 Pershing IAs, and the dual capable fighter-bomber aircraft of the alliance.(31:65-66) These aircraft are the F-4, F-104, Jaguar, Buccaneer, Tornado, and F-16. Not all of the aforementioned aircraft are currently outfitted to deliver nuclear weapons, however most of the total 650 aircraft of this type could quickly be modified if necessary.(31:65)

Strengths

The Pershing IA force has a limited mobile capability which complicates the S/WP targeting process.(31:66) These missiles are very effective against fixed and, to a lesser extent, mobile targets far behind the front lines.(31:66)

The dual capable aircraft have the same political and financial advantages as the dual capable SRTNF. Additionally, they share the capability of rapid retargeting within their operating areas.(31:62) Dual capable aircraft have great flexibility in the types and sizes of warheads they can carry. This flexibility, coupled with their ability to strike both fixed and mobile targets well behind the front lines, constitutes a highly effective strike force.(31:65)

Because these weapon systems have longer range, they are based further behind the front lines than the SRTNF. These

bases are more secure from overrun than the SRTNF. This security affords the theater commander the option of delaying the release of nuclear weapons longer than for the SRTNF without losing the deterrent value of these systems. When nuclear weapons are released, commanders of these longer range systems would have the time to concentrate their forces through coordinated attacks. This ability to concentrate their power through coordinated attacks, would increase the effectiveness of these weapons against all targets including the second echelon of the S/WP forces. (31:65)

The largest component of the MRTNF is the dual capable aircraft. It's characteristics of speed, range, and flexibility add immensely to NATO's deterrent posture. Both the Pershing missiles and the dual capable aircraft are not without their own weaknesses.

Weaknesses

The Pershing IA missiles, while mobile, do have a distinct handicap. These missiles must be launched from a pre-surveyed site. (31:66) This limits the number of possible launch sites thus reducing, somewhat, the positive effects of being a mobile system since the possible launch sites could be known by the enemy. Because of their age, 1960's vintage, they are cumbersome to setup for launch and, therefore, not as responsive as newer systems. (31:66)

The aircraft of the MRTNF also have some inherent problems. Many are older aircraft with limited night or bad weather capabilities. (31:66) They all require fixed bases from which to operate and these bases are subject to relatively easy destruction by the enemy. (31:66) Aircraft, unlike missiles and artillery shells, are subject to enemy air defenses. Finally, the dual role of these aircraft presents the commander with the dilemma of losing his aircraft fighting a conventional battle and, therefore, not having the full complement of delivery platforms available if the use of nuclear power becomes necessary.

LONG RANGE THEATER NUCLEAR FORCES

The Long Range Theater Nuclear Forces (LRTNF) of NATO consist of the F-111 aircraft of the US, which are based in England, and the Pershing II and Ground Launched Cruise Missiles (GLCM) which are deployed throughout Europe. (9:498; 31:65) After long negotiations, a treaty has been signed by the United States and the Soviet Union eliminating the Pershing II and GLCM. This treaty has not yet been ratified by the US Senate, but ratification is expected soon. Upon

ratification, the status of the LRTNF will change significantly. However, this paper will only address the current forces since little is known about NATO's intentions once these weapons are removed from Europe.

The LRTNF is capable of striking targets over 1000km behind the front lines. A look at any map of Europe reveals that these weapons can strike western Russia from bases in England and Europe. This fact causes the Soviet Union great concern. With its impressive capabilities the LRTNF is a significant force in the arsenal of NATO.

Strengths

The LRTNF has several advantages, in addition to range, over the MRTNF. The GLCM and Pershing II have the advantages of large numbers, dispersal over a wide geographic area, employment well behind the front lines, and the ability to operate independent of logistical support for extended periods of time. Both systems are capable of highly mobile operations with rapid launch response times while not being constrained to pre-surveyed launch sites like the older Pershing IA. (31:59)

The F-111 aircraft are based at two bases in England. This location greatly reduces the likelihood of the S/WP forces overrunning these bases. It does not preclude the possibility of airstrikes on the airfields, but compared to the NATO aircraft based in continental Europe they enjoy relative security. The long range of these aircraft make them ideal for deep interdiction missions as well as nuclear strike. Hence they too are dual capable aircraft. The F-111 is a highly accurate, all weather, day/night fighter bomber.

Weaknesses

The dual nature of the F-111 make this aircraft a high value asset to a commander. When he weighs the possible loss of these weapon systems in a conventional battle, he must consider carefully the fact, that no other aircraft in the NATO inventory has the F-111s range and, thus, the capability to strike deep with nuclear weapons. That these aircraft have little with which to defend themselves and cannot out maneuver most S/WP fighters if attacked, complicates the decision to commit them to a risky conventional mission.

The basing and storage sites of the GLCM and Pershing II remain vulnerable to ground attack. This means that these systems could be lost if they are not dispersed in time with

the onset of hostilities.(31:59) Overall the LRTNF is less vulnerable to attack than either of the other TNF systems.

If these LRTNF systems are employed against the Soviet Union itself, it is possible that the Soviets might respond with an all out strategic nuclear attack. This issue further complicates the decision whether or not to escalate to this level of nuclear response. It is just such a dilemma that NATO's strategy of flexible response was developed to reduce. The conventional forces of the alliance must be able to provide another option in the defense of NATO. A look at those forces follows and will include air, ground, and sea forces.

CONVENTIONAL FORCES

AIR FORCES

The Air Forces of NATO employ four classifications of aircraft. They are: fighter-bomber, interceptor/air superiority, reconnaissance/surveillance, and aerial tankers. These aircraft are a vital portion of NATO's defense and would be called on to perform across the spectrum of conflict should the need arise.(27:2-1) NATO dual capable aircraft are assigned missions in support of FOFA, which employs conventional attacks, and in support of the TNF, should NATO begin to lose the conventional battle. FOFA adds depth to NATO's forward defense and the air forces of NATO are the sole force committed to the execution of that mission.(6:136) For NATO air forces to perform their interdiction role they must have some degree of air superiority. This means they must be relatively free from both enemy air and ground defenses, most importantly the airborne threat. FOFA will not take precedence over the task of forward defense. Because of these factors NATO air forces will have to simultaneously defeat S/WP air forces, assist ground troops in defeating S/WP ground forces, and perform FOFA missions against the S/WP second echelon.(30:43) The task assigned to NATO's air forces is formidable indeed.

Of the NATO nations, only Iceland and Luxembourg do not have an air force. Iceland's air defense is assured by US forces.(14:294) Along the more than 3000 miles of NATO's border with S/WP countries the air forces of the alliance are committed under five separate commands all falling under the central command of Allied Command Europe (ACE).(14:294) These forces are not a first strike force. Rather, they are a defensive force. As part of the NATO deterrent force many of the aircraft in these forces are committed to both a conventional and a nuclear role.(14:294) Because of this

dual commitment and the constraints placed on them by political and economic considerations, these forces have many strengths and weaknesses.

Strengths

The principle strength of NATO's air forces lies in its force modernization efforts. Several nations are taking delivery of F-16s. The countries of West Germany, the United Kingdom, Italy, and Spain are well under way in development of a new European multinational fighter for the 1990's. (6:135) The alliance is also fielding numerous new high technology weapons for its air forces. Weapons such as the improved smart munitions and submunitions, rocket assisted runway cratering bombs, improved laser target-marking techniques, and highly accurate position fixing equipment for aircraft have been entering the inventory in recent years and will continue to be introduced in the near future. (6:134,144; 30:38) All of these improvements contribute to a high single shot kill probability with today's NATO weapons. (30:45) In addition to the high tech aircraft and weaponry, NATO's air forces are enjoying a sortie generation rate which is far in excess of that which has been possible in past years. (30:32)

NATO's air forces have excellent reconnaissance, surveillance, and control aircraft. Their NE-3A (NATO AWACS) aircraft are excellent early warning platforms which greatly increase the effectiveness of NATO's air forces in both a defensive and offensive role. (6:139) Along with these aircraft, the US TR-1 adds new capabilities for real time target detection and all weather attack. (6:140)

NATO has made great strides in increasing the effectiveness of its limited resources by utilizing a concept called Collocated Operating Bases (COB). (30:44) Under this concept, aircraft of two or more nations will utilize a particular airfield. Located at these fields will be separate support items such as fuel and munitions. The effect of this is to enable recovery, retasking, and relaunch of more aircraft from bases which are closer to the optimum points. Now an aircraft of one country will not have to overfly perfectly good airfields simply because another nation owns that field. Another benefit of this concept is that reserve aircraft can now be brought to forward bases without the need to have those bases sit empty prior to their deployment. This will reduce the cost of maintaining facilities for these reserve forces. (1:185; 30:44)

Finally, today's NATO aircrews are absolutely top notch. Their training is better than ever before. They are training with other member nations extensively. As a result, NATO air forces are more than a match for the S/WP air forces despite

the substantial numerical superiority of the S/WP forces. (6:135)

Weaknesses

Perhaps the most telling weakness of the NATO air forces is its numerical inferiority. This inferiority in numbers of NATO aircraft extends from the northern flank all the way along the NATO-S/WP border to the southern flank. (6:147; 25:63; 26:128) NATO relies on reinforcements from the US with all of the problems attendant to transporting men and equipment across the North Atlantic. The S/WP forces can reinforce their forces much easier across land lines from western Russia. (6:135) Adding to the problem of numerical inferiority and reinforcement, currently only the US, with its prepositioned stockpiles of war reserve material, appears ready to sustain its air forces for more than a month. This time will be reduced if the US must distribute some of its supplies to other allies to compensate for their lack of supplies. (6:135)

Airfields of the alliance are vulnerable to attack from S/WP ground and air forces. (31:66) This vulnerability poses problems for Air Commanders. They face the double problem of not only losing their dual capable aircraft in a conventional battle, but also the possibility of having them return to their airfields and not be able to land as they run out of fuel or be damaged upon landing at a damaged airfield. (31:66)

Two technological shortcomings exist which limit the effectiveness of the current force structure. NATO does not have a standard NATO Identification System (NIS). This puts NATO aircraft in jeopardy of being shot down by friendly air and ground forces. (1:185) Secondly most NATO strike aircraft do not have an all weather/night strike capability. (31:65) This capability is vital for sustained around the clock operations against an attacking force.

The final shortcoming of NATO's air forces that will be examined is really a political problem. On the southern flank of NATO lie Greece and Turkey. Animosity between these two countries compounds the problem of securing this NATO flank. Problems that arise out of this dispute include a lack of a regional security consensus, poor military readiness, and outdated military equipment. (26:139) The region's air forces are judged to be poor because of these reasons and the fact that joint planning and joint exercises are virtually nonexistent. (26:126)

LAND FORCES

NATO land forces, just like NATO air forces have a formidable task to perform. Using the concept of forward defense, they are deployed to prevent the S/WP forces from being able to gain a victory in a limited conventional war. (8:19) Generally NATO forces are not deployed in their wartime positions. They would require 24-96 hours to deploy to their forward positions. In the FRG, nearly half of the forces are 50-100km from their border positions. (8:40) The S/WP forces, on the other hand, need only to advance 100-200km into the FRG to capture four of Germany's seven major industrial complexes. (8:18) With these distances involved in the defense of central Europe, advanced warning is required if NATO is to halt the S/WP forces before major territorial loss occurs. Considering the lack of territory to the west of the inter-German border, it is obvious that NATO's forward defense is the result of necessity not just a convenient strategy. (8:18) The land forces of NATO are committed to forward defense and their positioning, as well as their strength, is meant to provide a credible deterrent to S/WP aggression.

There are 26 divisions deployed in the central NATO theater and 45 divisions in the southern theater. In Norway there is one 6500 man brigade in place. Reinforcements and reserves for these forces consist of 39 divisions in the central region, 4 divisions and 1 brigade in the south and no standing reserve force in the north. (8:23; 25:62; 26:127-128)

Strengths

One of NATO's principle strengths has been its qualitative edge in weaponry. It possesses a significant lead in guidance systems and sensors for anti-tank weapons such as the TOW and HOT systems. (8:52)

Because NATO is in being to defend the member nations from attack, they have the advantage of being the defender. A well prepared defender is less vulnerable during an invasion than the attacking force and can use fixed positions to his advantage. (8:52)

Climate and geography provide advantages to NATO forces. In the northern region, the harsh climate and extremely rugged geography of Norway pose a natural barrier to an aggressor. An army on the move in this area in the winter time may spend more of its time fighting the elements than the enemy. (25:59) Again, the defensive should offer the advantage to NATO. In central Europe geography, specifically thousands of miles of waterways, again play a significant

role in the defense of NATO.(23:57) Having to cross these waterways, will slow the advance of any attacker and concentrate his forces at the available crossings. These NATO strengths are supplemented by some S/WP problems which play in favor of NATO.

Any large scale attack by S/WP forces would necessitate the movement of over one million men to staging areas prior to that attack.(8:37) This large scale movement would be hard to disguise and therefore, would provide significant warning to NATO. Additionally, this build up and resulting massing of troops would be particularly vulnerable to attack by NATO air and ground forces using either conventional or nuclear weapons. A final advantage that NATO forces possess, is that S/WP forces are organized around large numbers of combat units. These units are considered expendable and would be replaced with new units when these units are exhausted. The NATO forces, on the other hand, emphasize sustainability. This sustainability would be instrumental in keeping field units intact which would provide these forces a greater unity of effort. Replacing lost troops in a combat unit and reinforcing front line forces ensures that the veteran troops would provide continuity to the new troops, thus, speeding the learning curve in battle situations.(8:28) Despite these advantages NATO forces do suffer from several weaknesses.

Weaknesses

One of the most widely discussed problems the NATO forces suffer from is the great disparity in armor forces between them and the S/WP forces. Between 1978 and 1983 the S/WP forces increased their armor strength an amount equal to NATO's entire armor strength.(8:36) Combine this with the fact that NATO's reserve units lack the heavy armor to handle the S/WP forces and it becomes obvious why NATO wishes to maintain that qualitative edge in anti-armor weaponry.(8:36)

NATO reserves present other problems besides their equipment. The United States, the United Kingdom, and Canada have no ready pool of manpower to call on for rapid mobilization since they do not have universal conscription.(1:183) Geography presents problems when NATO is trying to reinforce its troops. Even if there was sufficient time to mobilize a significant reserve force, the necessary over water routes that would be used from North America, and even England, provide the S/WP forces with ample opportunity to interdict these forces before they could reach the European continent. The reinforcement of Norway would be tough indeed due to its extremely rugged coast line.(25:59) In the south the terrain and geographical position of the

southern allies would make mutual support very difficult. Overland aid would be very hard due to terrain and sea support would be complicated by the strength of the Soviet forces in the Mediterranean. (26:126)

Like the Greek-Turkish problem discussed under the air forces section, political problems pose significant limitations on the ground forces in the northern region. Norway has five policies that impact the defense of this region. 1) They do not allow foreign troops to be stationed on their soil in peacetime. 2) They do not allow nuclear weapons in Norway in peacetime. 3) They do not permit military maneuvers in that territory which borders on the USSR. 4) They invite S/WP observers to all military exercises. 5) They announce all maneuvers regardless of size (the Helsinki Accords require announcement of maneuvers which involve over 25,000 troops). (25:64)

Norway's total peacetime force consists of 40,000 men. The refusal to station allied troops in Norway makes it imperative that reinforcements be sent to Norway in the event of hostilities. (25:62) Geography as mentioned before will impede this action. All of the restrictions imposed on NATO pose problems for a credible defense of the northern flank, but in the eyes of Norway are critical to avoid antagonizing her Soviet neighbor. (25:64)

NAVAL FORCES

Naval forces of the NATO nations must defend the sea lanes of the Eastern Atlantic, English Channel, North Sea, and the Mediterranean Sea. (1:184) Norwegian naval forces are committed to defending the coastal flanks of the troops defending northern Norway and protecting southern Norway against the Soviet Baltic Fleet. (1:182) Forces of the Atlantic Ocean Command (AOC) have the task of controlling the Atlantic sea lanes for allied use in the resupply and reinforcement of NATO Europe. (28:38) AOC has the world's first international naval squadron, the Standing Naval Force Atlantic, which assists in the defense of the North Atlantic. (25:65) The Allied Channel Command controls and protects merchant shipping in the English Channel and southern North Sea. The Allied Command Europe, in addition to ground and air forces under its command, also commands the Allied naval forces in southern Europe, ie. the US Sixth Fleet in the Mediterranean. (28:38).

Strengths

NATO naval strengths center around two key areas, technology and geography. The geography of the region is significant in reducing the Soviet ability to transit certain vital areas freely. Soviet ships must transit very narrow straights to enter or exit the Baltic Sea, Black Sea, or the Mediterranean Sea. (20:70) The NATO countries adjoining these areas would seal these exits very early in any conflict. This not only blocks the Soviets from exiting these areas, but also prevents them from returning to home ports for resupply and repair.

In the area of technology, NATO has the lead in areas such as: anti-submarine warfare, aircraft carriers, and mine warfare. The US and the United Kingdom possess ". . .very capable and extremely quiet attack submarines". (20:70) NATO has a 5-1 lead over the Soviets in aircraft carriers and, with that lead, a significant advantage in naval tactical aircraft of all types. (1:187) The minelaying and minesweeping abilities of the Danes, Germans, Dutch, and Belgians add immensely to their ability to complete their mission of containing the Baltic Fleet. (20:73)

Weaknesses

The struggle for naval survival is definitely not one sided in favor of NATO despite its many strengths. Aside from a numerical disadvantage, several factors certainly work against NATO naval forces. The same geography that helps bottle up the Soviet fleets also create choke points through which NATO forces must travel to pursue and destroy those fleets. At the same time NATO forces will be concentrated in these areas when they are blocking Soviet transits, and therefore, would be easier to locate themselves. In the Mediterranean area NATO naval forces are vulnerable to Soviet long range Naval Aviation. (26:126)

A particular weakness of the NATO naval forces lies in the numerical differences between the northern NATO naval forces and the Soviet Northern Fleet. With the only NATO force present north of Norway being the Norwegian fleet, the Soviets maintain a considerable advantage since their Northern Fleet is their second largest. (25:61) The only NATO force available to assist the Norwegians is the seven to nine ship Standing Naval Force Atlantic from the north Atlantic area. (22:46)

Despite the technological advantages mentioned before NATO faces a considerable problem in the area of modernization. The Soviets have been upgrading their systems

and capabilities through modernization and the fielding of new classes of both submarines and ships at a much greater rate than NATO.(20:70) Generally, NATO countries, with the exception of the US, do not have the economic capabilities to build and maintain large offensive naval forces capable of countering the Soviet threat. Therefore, they will continue to rely on the US for the major portion of their naval needs.(21:34) They will, however, continue to field the naval effort necessary to support the specialized missions peculiar to their geographical location like the bottling up of the Baltic Fleet.

COMMAND, CONTROL, COMMUNICATIONS, AND INTELLIGENCE

Command, Control, Communications and Intelligence assets are vital to the deterrence of war as well as the successful prosecution of war should deterrence fail. The ability to know what is happening in the field and communicate commands to the troops is vital to all NATO commanders. The problem of identification of friendly aircraft discussed earlier is an example of a C3I deficiency currently being studied within NATO.(29:249) To solve this or any other C3I problem, NATO must meet four basic requirements. The total system designed must be survivable, responsive, secure, and affordable.(4:21) The threat from the S/WP forces is markedly superior to that threat NATO faced when it implemented its current C3I system.(5:16) Because of the basic need for C3I and the need to enhance its current capabilities NATO has implemented numerous programs to update C3I assets.(4:21)

Any discussion of C3I assets must also take into account the Electronic Warfare (EW) aspect of today's combat environment. It is not enough to have a system that can communicate rapidly over great distances. The information must be denied to the enemy (secure) and it must be attainable for the intended receiver (jam resistant). NATO C3I assets all employ EW components to insure they meet the requirements of security and responsiveness.

Strengths

NATO is not without strengths in the C3I arena. The NATO AWACS aircraft provide unprecedented warning and control of NATO aircraft, both in the defensive and offensive roles.(17:53; 29:249) These systems reduce the dependence on vulnerable ground radar sites which are less capable.

Reliability of western space based assets is one of its great strengths in C3I technology. The modernization efforts NATO is putting into C3I is typified by two systems.

Development of the Joint Tactical Information Distribution System for secure data and voice communications and the Joint Surveillance and Target Attack Radar System for real time target fixing and weapon guidance are major updates to NATO's capabilities.(15:64; 29:249) These systems, as well as other NATO C3I updates, are all being developed with interoperability as a chief priority.(5:24)

The US is preparing to deploy systems such as the Navstar/Global Positioning System which will provide highly accurate position and velocity information worldwide.(29:250) This system and others funded under President Reagan's strategic modernization program will play a large part in NATO's C3I operations in the future.(29:254)

Weaknesses

The greatest problem facing NATO in the area of C3I is the need for interoperability.(12:20) To be responsive to all the allied nations of NATO C3I information must be able to be disseminated rapidly. This can be done best if all the nations employ standard equipment to receive this information. NATO has suffered from parallel and nonstandard systems often produced concurrently by two or more countries without regard to what the other is doing.(12:20) This problem has been recognized and NATO has made interoperability a top priority.(5:16)

Another dilemma that NATO faces is that the Soviets now dominate outer space.(5:16) It has been assumed in the past that western technology is superior to the Soviets. This qualitative edge in space may not be as great as thought in the past.(5:16) Further exacerbating NATO's problems in space operations is the Soviet's capability in anti-satellite warfare.(13:16) The Soviet capability to destroy low earth orbit satellites is a threat to much of NATO's intelligence resources.

LOGISTICS

NATO logistics needs present their own set of challenges. Forces deployed in forward defense positions must be essentially self-sustaining while they wait for reinforcements.(24:60) Approximately 90% of all reinforcements and resupply needs of European NATO would have to travel by sea across the North Atlantic.(22:44) The size of the sealift fleet available and security of the sea lines of communications (SLOC) are vital to NATO in the event of war.

The need to reinforce NATO units rapidly with US forces emphasizes the requirement for heavy airlift since sea lift will be a slow process.

The challenges presented above are but two of many facing the NATO alliance. Instead of looking at the overall strengths and weaknesses of NATO logistics this section will cover logistics on an inter-theater level first then an intra-theater level.

Inter-theater Logistics

The inter-theater logistics operation is a vital element in the effort to sustain combat forces engaged with the enemy. If the naval forces of NATO have control of the SLOCs the greatest challenge to moving that vast amount of supplies across the ocean will be finding enough of the right types of ships to carry the men and equipment.(19:41) In the Falklands crisis, Britain used more merchant ships than Navy ships in their invasion and supply efforts.(19:41) This will also be true in the event of a NATO conflict. Merchant shipping has been on the decline in both Europe and the US, significantly so in the last five years.(19:41) Tanker capacity has diminished 36% and bulk shipping by almost 20%.(19:42) This decline has only partially been offset by an increase in container ships.(19:42) By 1990 the projected requirement will be for a capacity of 4.6 million deadweight tons. The projected capability will be 4.2 million deadweight tons.(16:937) The US navy is planning to increase its fleet of roll-on, roll-off ships from 61 to 100 to help overcome this deficit in capacity.(16:937)

Airlift requirements for rapid deployment and resupply also have some shortfalls. Current projected airlift requirements call for the transport of 66 million ton-miles per day. The current capabilities the C-141, C-5, KC-10 US Air Force aircraft combined with the US Civil Reserve Air Fleet (CRAF) are only 32.4 million ton-miles per day.(16:937) There is an urgent need to procure all 50 C-5Bs and 60 KC-10s already proposed, while at the same time continue with development and acquisition of the C-17. Enhancements to the CRAF by modifying 747s and DC-10s for cargo capability are also necessary.(16:937)

Another program NATO is undertaking to lessen the logistics shortfalls, is the Pre-positioning of Materiel Configured to Unit Sets (POMCUS).(3:52) Under this program the US Army plans to pre-position equipment and supplies for six divisions in Europe close to where they will be needed should they be called on to reinforce NATO units.(16:938) This will enable a faster deployment of forces to Europe

since the men could now come by air and have their equipment in place when they arrive rather than have to wait the approximate 15-20 days it would take to send that equipment by sea from the US. (16:937) Without POMCUS most equipment would have to come by sea during the crisis. Most of the equipment for large army units is either too large or there is just too much of it to airlift it to Europe. (32:33) Getting that equipment to Europe before the hostilities may be the only way to bring enough force to bear against the S/WP forces in time to prevent an unacceptable loss of NATO territory. POMCUS will also help solve the intra-theater logistics problems.

Intra-theater Logistics

Intra-theater logistics concerns itself with moving men and equipment to the needed areas within the theater. Some of this movement will be necessitated by the repositioning of troops along the front lines. Movement of supplies and reinforcements to the front lines from the point which they arrived in-theater will be the bulk of this logistics effort. The methods used to move this equipment are to move it by airlift, railroad, road, or pipeline.

The movement of POL whether by pipeline, road or rail typifies a nagging NATO problem. As shipments move from country to country within the alliance handling problems arise. Simple things such as compatibility of fittings for pipes and fuel tank couplings become a vexing problem. NATO currently is attempting to standardize all manner of logistics related items to permit more rapid handling and thus achieve greater utility from supplies for all member nations. (16:938)

That equipment which arrives in Europe by sea will be moved mainly by road and railroad from the sea ports to the forward locations. To lessen congestion on the roads 80% of this material moved overland will travel by rail. (16:938)

Intra-theater airlift relies heavily on the US C-130. This aircraft is an excellent shorthaul transport, but its design is more than 30 years old. (32:37) Present inter-theater aircraft such as the C-5, C-141, KC-10 and CRAF do not possess sufficient short field and unimproved field capabilities to fulfill the intra-theater requirements. The C-17 will be able to land on these shorter, more austere, landing fields thus supplementing the intra-theater airlift requirements by delivering inter-theater equipment further forward than can be delivered today. (32:36) The C-17 however, would not be cost effective in repositioning supplies within the theater when the demand for inter-theater

resupply is still high. This means that a new tactical transport is needed to replace the aging C-130 fleet. (32:37)

It is not uncommon to think of logistics last, but it must be remembered that the lack of capability to move men and equipment to and within a theater of operations translates directly into lost combat capability.

Chapter Four

RECOMMENDATIONS AND CONCLUSIONS

RECOMMENDATIONS

The NATO Identification System which has been endorsed by the alliance should be given top priority in its development and deployment. If NATO is to take advantage of its current impressive abilities in aircraft warning and control provided by AWACS, and its highly skilled aircrews flying some of the most advanced aircraft in the world, it must eliminate the need to close to within visual range to identify a target before firing. In order to utilize the force multiplier effect of modern technology, aircrews must not be limited to World War II tactics of identification.

The clear need for NIS has been agreed on. All members of the alliance must agree to a joint standard with a minimum delay. This system should be deployed in all NATO aircraft starting with those in the European theater, and then all the aircraft of all member nations.

The ability to airlift troops and their outsized equipment directly to their forward positions is essential. The C-17 will provide both inter and intra-theater capabilities not currently possible. Placing troops in their forward defensive areas greatly enhances their effectiveness. The ability to move larger quantities of large unit equipment is a capability that is vital to the defense of NATO. If this equipment can not be transported by air, the time spent waiting for sealift to bring that same equipment from the US to Europe could spell disaster for the troops already in place and for NATO itself.

The US must vigorously pursue the C-17 program and deploy this system at the earliest possible date. The ability to move heavy divisions with their equipment is crucial to any reinforcement plan in NATO if advance warning of an attack is not available or acted upon.

The current program to pre-position war material for use by reinforcements should continue, especially in Norway.

POMCUS is vitally important in reducing the required sealift in the early stages of hostilities and will provide the US with the capability to position larger numbers of fully equipped troops, in Europe quicker. Additional funds for this program should be made available so that all troops, those already in place and their reinforcements, have sufficient supplies available to sustain heavy combat for at least 30 days with minimum resupply needs. This program will not succeed if European nations are unwilling to expend the necessary funds to stock their supplies also. All the high tech weapons in the world are useless if they have no ammunition to shoot after the initial attack.

CONCLUSIONS

NATO forces enjoy a qualitative edge over the S/WP in most combat aspects. This edge is small in some areas such as the naval forces. At the same time NATO suffers from a numerical inferiority in most combat forces.

The strategy of flexible response provides a credible deterrent to aggression. It utilizes forward defense and FOFA which capitalizes on the strengths of their forces to compensate for many of their weaknesses.

NATO forces must continue to exploit advancing technology, however, planners and economy minded governments must remember that in any battle there will be losses. If NATO is to stop any aggression they must be able to absorb these inevitable losses and continue to carry the battle to the enemy. Using high technology as a force multiplier is absolutely necessary, but equally important is the ability to sustain their forces.

Greater interoperability and force modernization should certainly be two of the key factors in NATO's future plans. The ability to reinforce and resupply the front line troops will remain a critical question in its capability to execute its strategy. The capability to sustain their forces was always a critical factor to the allies in World War II and it remains so today.

NATO's strategy is sound. The plan to implement that strategy is strong. NATO will continue to deter the S/WP as long as its forces are deployed and trained with the same commitment that is currently being focused on them. If the hurdles mentioned above can be overcome NATO will remain at peace at least another 40 years.

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